Successively, an unnecessary portion of the coating layer is removed by sandblasting. Thereafter, curing is carried out so as to obtain the barrier rib with a predetermined configuration.

When the barrier rib material is used in the form of a green sheet, the green sheet comprises a thermoplastic resin, a plasticizer, and where necessary, other additives in addition to the glass powder and the filler powder. The total content of the glass powder and filler powder in the green sheet is generally from about 60% to 80% by mass.

Such thermoplastic resin and plasticizer for use in the green sheet include similar thermoplastic resin and plasticizer for use in the preparation of the paste. The content of the thermoplastic resin in the green sheet is generally from about 5% to about 30% by mass, and the content of the plasticizer is generally from about 0% to about 10% by mass.

The green sheet is generally produced in the following manner. Initially, the glass powder, filler powder, thermoplastic resin, plasticizer, and where necessary, other additives are prepared, a major solvent such as toluene and a secondary solvent such as isopropyl alcohol are added to the above-prepared components to thereby yield a slurry. The slurry is applied onto a film such as poly(ethylene terephthalate) (PET) by the doctor blade process to thereby form a sheet. The solvent is then removed by drying to thereby yield a green sheet.

The above-prepared green sheet is applied onto a portion, where a glass layer is to be formed, by thermocompression bonding and is fired or cured to thereby yield a glass layer. In the formation of barrier rib, the green sheet is applied by thermocompression bonding and is then subjected to a procedure similar to that in the paste to thereby form barrier rib having a predetermined configuration.

In the above description, the method of forming the barrier rib is explained by taking the sandblasting process using a paste or green sheet as an example. In addition to this process, however, the barrier rib material of the present invention can also be applied to other formation techniques such as printing lamination, lift-off process, a process using a photosensitive paste, a process using a photosensitive green sheet, press molding and transfer printing.

(Examples)

The present invention will be explained in further detail with reference to several examples and comparative examples below, which are not intended to limit the scope of the invention.

[Glass Powders]

Tables 1 to 3 show the compositions and characteristics of the glass powders for use in the barrier rib materials for plasma display panels. Tables 1 to 3 relate to a PbO-B_2O_3-SiO_2 glass, a BaO-ZnO-B_2O_3-SiO_2 glass and a ZnO-Bi_2O_3-B_2O_3-SiO_2 glass, respectively.

Table 1

	A	B	C
COMPOSITION (mass%)			
PbO	40.0	55.0	63.0
B_2O_3	45.0	30.0	10.0
SiO_2	10.0	10.0	27.0
Al_2O_3	5.0	5.0	–
SOFTENING POINT (℃)	570	540	550
DIELECTRIC CONSTANT (25℃, 1MHZ)	6.5	8.0	11.0
COEFFICIENT OF THERMAL EXPANSION [30–300℃ ($\times 10^{-7}$/℃)]	65	68	70

Table 2

	D	E	F
COMPOSITION (mass%)			
BaO	38.0	33.7	26.6
ZnO	30.6	42.9	42.3
B_2O_3	31.4	16.8	24.1
SiO_2	–	6.6	7.0
SOFTENING POINT (℃)	602	592	615
DIELECTRIC CONSTANT (25℃, 1MHZ)	9.5	10.0	9.0
COEFFICIENT OF THERMAL EXPANSION [30–300℃ ($\times 10^{-7}$/℃)]	85	71	67

Table 3

	G	H	I
COMPOSITION (mass%)			
ZnO	32.0	33.0	27.0
Bi_2O_3	26.0	26.0	39.0
B_2O_3	27.0	21.0	19.0
SiO_2	2.0	5.0	7.0
CaO	13.0	15.0	8.0
SOFTENING POINT (℃)	565	576	568
DIELECTRIC CONSTANT (25℃, 1MHZ)	11.0	10.5	11.0
COEFFICIENT OF THERMAL EXPANSION [30–300℃ ($\times 10^{-7}$/℃)]	85	83	85

Glass powders (Samples A to I) were prepared in the following manner. Initially, glass materials composed of oxides were uniformly admixed in the compositions indicated in Tables 1 to 3, the mixtures were placed in a platinum crucible and were melted at 1250°C for 2 hours to thereby yield uniform glass. The glass was pulverized and classified to yield a series of glass powders having D50 of 3 μm and Dmax of 20 μm.